Substitute Specification

INVENTION CLAIM FOR UTILITY PATENT

TOILET ODOR BLOCKING SYSTEM, METHODE OF USE AND TOILET BIDET

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CROSS REFERNCE TO RELATED APPLICATIONS

Current U.S. Class:	4/20.4; 4/448; 4/214; 4/216; 285/133.11	
3,762,875	Oct. 2, 1973	Burmeister , Odor sealing method
5,277,226	Jan. 11 1994	Kuhlman, Water line adapter
5,958,334	Sept. 28, 1999	Bruce, Haddon Combination capable of forming an odor barrier and methods of use
6,029,286	Feb 1 2000	Funk, Odor removing apparatus for toilets
6,105,179	Aug. 22, 2000	Burns, Toilet / Bidet seat

Foreign Patent Documents

W0008706289A2	Oct. 22,1987	Conrad	4/661 DE

Process and system for using a pedestal toilet, urinal and similar

FEDERALLY SPONSORED RESEARCH AND DEVELOPMENT

Not applicable

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BACKGROUND OF THE INVENTION

Field of Invention

This invention relates to Toilet Odor Blocking, Toilet Bidet and Water in-Line Adapter.
It creates a continuous stream of bubbles by using small air compressor, water and liquid soap, the same bubble dispenser line with higher water pressure becomes a low cost Toilet Bidet system and the invention uses a special in-line water T adapter with male / female Ballack threading connecting to the toilet tank valve for easy installation.
The newer toilets in most countries are water saving low flush types. The human waste in the toilet bowl is exposed with less water in the bowl and creates an even greater need for a workable, low cost odor blocking or odor venting system for toilets.
There are several innovations dealing with this kind of problem hardly any of them is on the market due to being a cumbersome or impractical or expensive design with many parts.
Chemical odor control for indoor toilet consists mostly as blue tablets in the tank (sold under the trade name Vanish (or similar chemical liquids), it is a partial odor control at best, active odor control ingredients get diluted fast and it is fairly costly to maintain the required chemical concentration. Odor filled air should leave the toilet bowl before it reaches the ceiling fan or permeates the surrounding area or odor should be blocked before it escapes from the toilet bowl.
My invention creates a continuous stream of bubbles as an odor-blocking barrier using domestic water source, liquid soap, small air compressor and mixing pipe, dual function bubble dispensing / bidet adapter has dual functions serving also as a Bidet adapter, and a T adapter providing a convenient connection to the toilet valve.

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Description of Prior Art

Odor blocking as Funk teaches in 6,029,296 uses a small pressurized chemical can for delivering an odor reducing chemical to a toilet bowl with spray nozzle, no mention of how often these pressurized can would last or the frequency it needs to be replaced.

Haddon in 5,958,334 describes an odor trapping system, using many different kind of chemicals and some foam is created purely by these chemical reactions.

Burmeister's patent 3,762,875, Odor sealing method describes a chemically created foam with several mixture formulas to be sprayed into the toilet bowl by compressed air creating the dense foam barrier. Chemical agents like alcohol, sulfates, fatty acids, perfume etc are used, but it is a costly mixture for daily use in an average home.

Conrad's patent W00087/06289A2 (PCT/EP87/00178) of Oct. 22,1987 teaches a Process and System for using a pedestal toilet, urinal and similar whereby prior to deposition of excrement, a layer of foam is produced and pumped into the bowl area from the foam storage.

This system has two chambers; one foam mixer using concentrated chemical, and the second chamber is for foam storage, so it needs two liquid pumps running on electricity, wires are submerged creating potential electrocution hazard. The chambers as the patent describes it, are part of the toilet tank, thereby reducing the tank's flushing water capacity. This patent generally relates to foam introduction into the bowl area by foot pumps, by bulky hair dryer type blower, or using a system of tubes embedded into the toilet seat or toilet lid. The foam generated by this system as is generally dense. Burns in patent No 6,105,179 shows a toilet seat bidet with a pivotable water conduit with a spring and a positioning handle.

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Description of Prior Art

Kuhlman in Patent No 5,277,226 created a water line adapter for providing additional water source for kitchen appliances. This adapter is very useful in many cases it connects to an already installed shut off water valves, which are mostly compression type fittings.

Response to the Restriction Requirement

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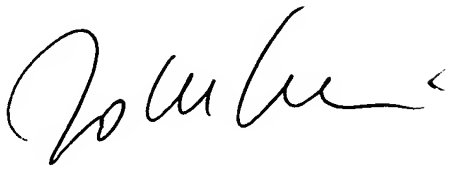
The elected invention is the odor blocking system capable to provide stream of bubbles by using mixture of water and chemical capable to create bubbles or foam using air pump to create and deliver air bubbles to cover the human waste in the toilet bowl. Other components of the invention are part of the dependent claim.



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BRIEF SUMMERY OF THE INVENTION

This is a low cost Toilet Odor Blocking System with bidet function and a water inline Bullcock threaded T adapter blocking the odor evaporation from the human waste by covering it with continuous stream of scented soap bubbles.

The elected invention is the Toilet Odor Blocking system, using soap bubbles to block odor from escaping, the secondary is the dependent Bidet function, by using more vigorous water flow converting this system to be a low cost bidet.

This air bubbler system can be attached to any standard toilet type factory installed or after sales installation, it can use pre-mixed soapy solution or pressured water to mix it with liquid soap to create the bubbles with an adjustable air pump.

The object of this invention is create a universally adoptable inexpensive odor blocking system for indoor toilets without using expensive chemicals or ventilation systems. Operating cost is very low, the system uses about 100 drops of water with 5-10 drops of liquid soap in bubbler mode, 1-2 fl.oz. water / minute. The bubble dispenser line is attached around and below the rim of the toilet bowl or attached under the toilet lid, it has 5-10 small 1/2 mm pin holes to create the bubbles with low pressure to cover the human waste, blocking the odor. The bubble dispenser line has a small pierced head, short slightly elevated open ended ¼" extension tube or it may be terminated with a small cap with 3-4 larger holes as an elevated bubbler / bidet output, pivotable at the rear or at the front end of the toilet bowl. Just by increasing water pressure this extended bubble dispensing line becomes a bidet fountain since larger water volume can only pass trough the bidet line. Uninterrupted water source for the bidet is supplied from the any prior art off the shelf T adapter, dedicated water supply, or from an inline water adapter.

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BRIEF DESCRIPTION OF SEVERAL VIEWS OF THE DRAWING

FIG 1 on sheet 1 of 6 of the drawing pages shows side perspective view of a toilet bowl (1) with water tank(4), air pump (2), liquid soap container (40), mixer tube (22), adjustable valves (13) check valves (5A,B), compression type needle valve providing continuous water source (20) for bubble making and for bidet use, T connector (43) with Ballack threading, bubble dispensing line (30), pivoting bidet arm (27), short burst bidet water source (15).

FIG 2 shows a new type of T adapter (43) connecting to the toilet valve (10).

FIG 3 on sheet 2 of 6 shows the pivotable Toilet bidet (33) a small hose cap with a few holes (31) and the bubbler dispenser hose (55) with bubbling holes (35). Bubbler hose is located under the toilet bowl's brim. Slow flowing soapy water with air creates continuous stream of odor blocking bubbles, due to gravity bubbles exit on the bottom pin holes(35) of the flexible adapter(55), intensive water flow creates a small stream of bidet rinsing water(37) at the vertical, flexible bubbler extension(31) as a dependent secondary claim.

FIG 4 on sheet 2 of 6 shows prior art barbed connector (34), FIG 5 barbed adjustable valve (13) to control water flow.

FIG 6 sheet 2 of 6 shows a different version of the mixing tube (22) water, liquid soap and air flows into the tube inlets and bubbles exit at outlets(30).

FIG 7 on sheet 3 of 6 shows the top view of different arrangement of the bubbler with mixing tube (22) and liquid soap container (40) located between the toilet lid and toilet tank. Bubble dispenser line (55) with small bidet hose (31), air pump (2), water valve (20), bubbly water hose outlet (30).

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FIG 8 on sheet 4 of 6 shows the cross section of the toilet bowls' rim area. Bubble Dispenser / bidet adapter hose (55) is held up by clamps (51), bubble holes (35).

FIG 9 sheet 4 of 6 shows a perspective view of the bubbler set up from the left side with one bubble dispensers (30), inline T connector with compression fitting (43), L shaped bracket (21) attached by two toilet lid screws (60),supporting the needle valve(20) in a convenient location just below the toilet tank (4).

FIG 10 sheet 5 of 6 shows a preferred compact, enclosed arrangement of the odor blocking bubbler system preferably located on the side of the toilet tank with liquid soap bottle(40), air pump(2), on off switch (10), mixing tube (22), needle water valve (20).

FIG 11 sheet 6 of 6 shows the bottom of a toilet seat with bubble dispenser tubes attached by clamps (58) with bidet's hose cap with a few holes(31).

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DETAILED DESCRIPTION OF THE INVENTION

The elected invention on FIG 1 sheet 1 of 6 is a new art, low cost odor blocking system as it produces a stream of bubbles to cover the human waste with a new a method, by using a bubbler dispenser / bidet tube (55). There are two ways to provide water; a Bullcock type threaded in-line T connector (43) with a preferred compression fitting for the for the steady slow flow bubbler function (like fast dripping), the second water source is the partially diverted toilet bowl filler in the bidet mode only, as a dependent claim hose (15) supplies water for a short rinse.

For an easier understanding of this invention, FIG 1 shows a system setup / perspective view, but most of the actual components can be located on the side, inside or below of the toilet tank, where only the bidet adapter's handle(27), ¼ " flexible hose (30), water valve (20) and air pump on /off switch (10) need to be more accessible preventing any clutter.

FIG 1 on sheet one of the drawing pages shows the side perspective view of a toilet bowl (1) with water tank (4) separated, air pump (2) with on /off switch (10), AC plug (20), liquid soap container (40), mixer tube (22), adjustable valves (13) check valves (5), compression type needle valve providing continuous water source (20) for bubble making and for bidet use.

T connector (43) with Bullcock threading, bubble dispensing line (30), pivoting bidet arm in normal (27) and in bidet activated position (28), short burst bidet water source (15) with valve (13D) bringing water to the pivotable bidet rinsing head (31), flushing water from tank (4) connects to bowl(1) at flushing inlet (8), supporting bracket (21) is held up by lid screws (7).

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DETAILED DESCRIPTION OF THE INVENTION

The odor blocking bubble-making function is as follows: The air pump (2) is plugged in by plug (20) is turned on by switch(10), air hose (6A) connects to an adjustable valve (13B) to adjust air pressure channeled into the liquid soap container (40).

In line air (6B) flows to check valve (5A) than trough adjusting valve (13C) into the mixing tube (22) to mix and expel the soapy water into bubbler / bidet adapter (55) via connecting hose (30). Extra air is introduced from the same air hose via (13A) valve after the soapy water is pushed out from mixing tube (22) to further increase the bubble content as they exit in the bubbler adapter outlets (35) on the bottom Fig 3.

Gravity and low water volume (1-10 oz/min) keeps the mixture on the bottom of the adapter, therefore air pressing out forms a continuous rich layer of bubbles (3) covering the human excrement to block odor from escaping the bowl area FIG 1, 3.

Position of the soap container in this illustration is outside of the tank, but it could be located inside the tank, or behind the tank to be out of sight. Air pressure forces the liquid soap to exit the closed bottle trough pipe(41) trough a check valve (5B) preventing any water flowing up to the air pump or to dilute the soap mixture. Flow controller (38) limits the liquid soap amount to dripping, making this odor control system very economical. Liquid soap line (42) connects to the flexible hose with a T barbed connector(34) Fig 4 and water forces it into the mixing tube (22).

This invention introduces a dependent new art, a water in-line T adapter connector (43) with a male and a female universal bullock type threading with a preferred compression type fitting to provide and extra outlet from the toilet water line tank.

FIG 2 show a close up drawing of the water inline adapter (43) providing an extra, convenient way to create an additional easy water source for toilet bidet and for the bubbler.

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Top end of water line adapter is Bullock / toilet valve type rotateable captive threaded (45) nut (46), it connects with the toilet valve's male thread with washer (12), bottom end is a male threaded, connecting to a flexible inline water hose with washer (49).

The preferred side connection of the T adapter (47) is compression type nut (61) to provide easy connect-ability to the toilet bubbler / bidet, or for other water requirements in the bathroom area with plastic or flexible rigid hose (29).

FIG 1 and 3 shows the pivotable bidet's bracket (21) bidet arm(33), handle (27), flexible plastic or vinyl tube (30) conducts the soapy water with air to the flexible bubble dispenser /bidet adapter tube (55) which is attached under the rim (50) channeling the flushing water of the toilet bowl (1). Clamps (51) hold up the bubble dispenser tube connecting to hose (30) with a barbed T adapter (34). Bubble dispenser tube has 4-10 small pin size holes (35) on the bottom of the tube with the pivotable small shower / bidet head (pierced cap)(31). To produce the odor blocking bubbles (3), small amount of diluted liquid soap exit the pin size holes with air, creating the bubbles, gravity keeps the liquid in the bottom of dispenser tube, depending the amount of water amount , some bubbles may exit at the (shower head) bidet hose cap with larger holes (31).

For the bidet function the water flow is increased to ½ to 1 gal/min from the needle valve (20) by turning the handle (39), most of the increased amount of water exist at the small bidet tube (31) located in the center upper side of the bubbler tube(55) in the front or in the rear above the small bubble holes(35) Fig 1, 3, 7.

Continuous bidet water can be turned off by handle (39) if rinsing is no longer required.

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DETAILED DESCRIPTION OF THE INVENTION

Bowl filling water from top of tank valve (10) can also be used for short bidet function FIG 1 hose (15) connects to barbed connector (61) where water is flowing after flushing until tank (4) is filled and shut off by level sensor, or floating ball (9). Hose (15) has a small hole (60) as an air bleeder inside the toilet tank to disable siphoning off the tank water tank. This limited amount of tank filling water is adjustable by flow controller (13D) as water is channeled to hose (30) and to bidet hose cap (31) creating the rinsing spray (37) in the back of the toilet as the head is adjustable by tilting the bidet head (31) with bracket handle (27).

Only a small amount of pivoting rotation is needed, pivoting arm (33) held to bracket (21) by two small clamps (32), on the bottom side spring (24) Fig 1 keeps the bidet head in a normal position. Spring (24) in one end is secured or hooked to main bracket (21) at location (23) to a small arm (26) attached to the rotating pivoting arm (33). Bidet tube (31) and bubble dispenser hoses are flexible, allowing plenty of extra room for moving the bidet head into the desired position.

FIG 4 shows an existing art barbed T connector (34) and FIG 5 existing art flow volume control (13) used in this invention.

FIG 6 shows a slightly different mixing tube (22), air intake line (6), volume adjustment (13C) water intake (29), water flow control (20) with a small jet tip (21) sprays into the mixing tube to create more bubbles (3). Liquid soap enters into the tube via volume limiter (38), flexible hose (42), this mixer has three small diameter flexible hoses(30) to guide the bubbles into the bowl area eliminating the need for the bubbler dispenser (55) in some cases.

FIG 7 sheet 3 shows the top view of a typical arrangement of the odor blocking / bidet system.

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DETAILED DESCRIPTION OF THE INVENTION

Most of the components are the same as in Fig 1 with different arrangement, all these components can be placed in a small box based on design of the toilet, it can be placed front of the tank, by the side, behind the tank and leaving only one small tube(30) to connect to the bubbler dispenser / bidet tube (55) .

Fig 7 sheet 3 of 6 shows the continuous water source providing from the main water valve (54) with dual outlet, one for the toilet valve (10), and one for the needle valve via preferred compression fitting or by flexible hose (29) to valve (20) to supply the odor blocking bubbler and the bidet. Preferred location of the needle valve (20) for easy adjustment and air pump switch (10) is on the bracket (21) on the side, which is attached to the bowl under the toilet lid screws (7) to provide solid support, other components can be located in more concealed area.

When valve (20) is slightly opened (fast dripping flow 1-6 oz/min) water enters into the mixing tube (22) approximately 2.0" long by ½" in diameter mixes with liquid soap.

When air pump (2) is turned on by switch (10), air hose (6) conducts the pressurized air trough volume control (13B), soap container (40), concentrated liquid soap is pressed out trough check valve (5A), volume reducer (38) into the mixer (22). Pressured air from air pump (2) via preferred vinyl or PVC hose(6), check valve (5B), volume control (13D) enters into the mixing tube (22) and forces the diluted soapy mixture via tube (30) into the bubble dispenser / bidet adapter (55). Slow flowing soapy water pressured by air creates a continuous stream of bubbles (3) leaving at holes (35) to cover the human excrement by several inches high to prevent odor from escaping. This dual function bubble dispenser / bidet adapter tube is a more rigid, but flexible tube usable for compression fitting. Other interconnecting tubes are preferably ¼ " vinyl or similar plastic tubes suitable for lower pressure barbed connection.

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DETAILED DESCRIPTION OF THE INVENTION

The bidet function is as follows: When odor-blocking function is no longer desired, water valve(20) can be fully opened as long as it is needed to provide the higher pressure / volume water, which flows all away to the bidet /shower head (31) on the front of the toilet bowl below the rim to rinse off body parts to achieve the highest hygiene possible at the lowest cost. Automatic bidet function is achieved after flashing the toilet for short rinse, or uninterrupted rinse by using valve (20). Most toilet tank valves (10) have a small hose filing the bowl (1), keeping the water flowing until the tank is filled, during this time water also flows trough the over flow pipe (8). This bowl filling water is diverted from the tank valve's barbed adapter (61) using hose (15), volume controller (13D), hose (30) than rinsing water ends up at he bidet head on the front end of the toilet (31).

The bubbler adapter's (55) holes are pin sized (35), low volume low pressure soapy water exits in form of bubbles, bidet head (31) is slightly elevated in relation to the rest of the adapter hose and it is attached with barbed fitting, tiltable for the desired angle. Several larger holes in the bidet head allows a generous water supply to flow trough for proper hygiene. Bubbler / bidet adapter (55) is secured inside the bowl (1) under the rim by clamps (51) preferably by flexible and adjustable plastic clamp, or stainless steel. Bidet head (31) can be positioned for self-cleaning, placing it in line with the regular water from valve (20).

FIG 8 shows a closer cross view of the top side of the toilet bowl (1) with rim (50) conducting the flushing water, clamp (51) holding up the bubbler / bidet adapter (55) and bubble holes(35).

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FIG 9 on sheet 4 shows left side perspective view of a typical toilet with only the odor blocking and bidet system where the water source is the (new art,) in-line water T diverter (43), it connects to the tank's valve at the bottom (11). The supporting bracket (21) is in an L shape, supported by the toilet lid screws (7) providing convenient and secure location for the needle valve(20).
The other components and functions of this invention are the same as on FIG 7 or FIG 1.
FIG 10 sheet 5 shows a preferred arrangement of the odor blocking bubbler / bidet system in a box, with hangers (44) as it is attachable to the side of the toilet tank, springs (36) can hold the bottom of the box in a steady place. Air pump (2) is turned on by switch (10), pumps the air into the soap bottle (40), liquid soap flows trough hose (42), volume limiter (38) and check valve 5C into the mixing tube (22). Water enters into the mixing tube using compression water line (29), valve (20) is turned on by handle (39), air is pumped into the mixer via check valve 5A, volume controller (13C), soapy water leaves at hose (30) with additional air trough volume control (13A) to the bubbler dispenser.
FIG 11 sheet 6 shows the bottom of a toilet lid (59) with the bubble dispenser / bidet adapter attached to the bottom of the lid with clamps (58), bubbler holes (35), lid pivoting attachment screws (60), water line (30) communicates the water to the bidet (spray) head (31) to create hygienic rinsing (37).